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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/263,842	03/08/1999	TAKAAKI TERASHITA	IONPA-5001	2295

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MORGAN LEWIS & BOCKIUS LLP  
1111 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 20004

EXAMINER
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WU, DOROTHY

ART UNIT	PAPER NUMBER
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2697

DATE MAILED: 05/07/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/263,842

Applicant(s)

TERASHITA, TAKAAKI

Examiner

Dorothy Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Response to Arguments*

1. The information disclosure statement (IDS) submitted on 2/27/03 was filed after the mailing date of the Application 09/263,842 on 3/8/99. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

2. Acknowledgement is made of the amendments to the specification and claims, filed on February 27, 2003. All objections to the specification and 35 U.S.C. 112, 2<sup>nd</sup> paragraph rejections directed towards claims 6, 7, 15, and 16 are hereby withdrawn.

3. Applicant's arguments filed February 27, 2003 have been fully considered but they are not persuasive.

The applicant has argued: "Accordingly, the adjustment value  $c$  of Kawabata is not used for correcting the densities of the input video signals but first and foremost for the correction of the histogram. On the other hand, the density conversion condition of the present invention is used for correcting the densities of the input image data so as to obtain corrected image data." The examiner respectfully disagrees. The adjustment value  $c$  of Kawabata is used to correct the histogram of the input video signals, and such correction alters the density of the input image data to obtain corrected image data. There is a causal relationship between the application of adjustment value  $c$  to the histogram and the correction of densities of the input image data.

The applicant has argued: "Moreover, the gradation correction of the instant invention is performed on the basis of the result of the density correction. Accordingly, there is a causal relation between the gradation correction and the density correction in that the former is dependent on the results of the latter...Kawabata does not teach or suggest at least the steps of 'determining [next] a gradation conversion condition for the image expressed by the digital image data on the basis of the density conversion condition.' Applicant further submits that Kishida fails to cure these deficiencies of Kawabata." The examiner acknowledges that in the applicant's specification, there is a causal relation between the gradation correction and the density correction in that the former is dependent on the results of the latter. However, the examiner wishes to point out that in the art of image processing, gradation and density are comparable terms and are often used interchangeably. The examiner has interpreted the adjustment value  $c$  to be the density conversion condition and the histogram correction to be the gradation conversion condition, wherein the latter depends on the former. Since density and gradation are comparable terms, the claim language can be read to suggest that only one image processing step has taken place. As density and gradation are comparable terms, use of the terms to distinguish between two processes would constitute a use of the terms repugnant to their known meanings.

The applicant has argued: "In light of the arguments presented above for independent claim 1, Applicant submits that Kawabata does not teach or suggest at least the step of 'determining a density conversion condition for converting a density of the density component data, and determining a gradation conversion condition for converting a gradation of the digital image data on the basis of the density conversion condition.'" The examiner respectfully

disagrees. The examiner has already pointed out that gradation and density are comparable terms. The examiner has interpreted the adjustment value *c* to be the density conversion condition, which is used for determining a histogram that will convert the density of the density component data. The examiner has interpreted the histogram correction to be the gradation conversion condition, which converts gradation of the digital image data on the basis of the adjustment value *c*. Therefore, both the adjustment value *c* and the histogram correction are used for the purpose of converting the density/gradation of the image data. Since density and gradation are comparable terms, the claim language can be read to suggest that only one image processing step has taken place. As density and gradation are comparable terms, use of the terms to distinguish between two processes would constitute a use of the terms repugnant to their known meanings.

The applicant has argued: "Independent claim 10 recites an image processing apparatus...comprising...an image data converting means in an arrangement where the gradation conversion condition determining means determines 'a gradation conversion condition for the image expressed by the digital image data on the basis of the density conversion condition,' and the image data converting means creates 'the reproduced image by modifying the digital image data on the basis of at least one of the density conversion condition and the gradation conversion condition.' In light of the arguments presented above for independent claim 1, Applicant respectfully submits that Kawabata does not teach or suggest at least the features of claim 10 recited above." The examiner respectfully disagrees. The examiner has interpreted the gradation conversion condition determining means to be the histogram correction circuit 3, which determines the gradation conversion condition (the corrected histogram) based on the density

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conversion condition, namely, the adjustment value c. Furthermore, the examiner has interpreted the image data converting means to be video signal correction circuit 4, which creates the reproduced image by modifying the digital image data by applying the corrected histogram to the video signals to create the reproduced image. The corrected histogram is formed on the basis of the adjustment value c, which is the density conversion condition.

The applicant has argued: "Independent claim 11 recites an image processing apparatus...comprising...at least a density conversion condition determining means, a gradation conversion condition determining means, and a data converting means in an arrangement where the density conversion condition determining means determines 'a density conversion condition for converting a density of the density component data,' the gradation conversion condition determining means determines 'a gradation conversion condition for converting a gradation of the digital image data on the basis of the density conversion condition,' and the data converting means modifies a density component data 'in accordance with the density conversion condition and the gradation conversion condition.' In light of the arguments presented above for independent claim 1, Applicant respectfully submits that Kawabata does not teach or suggest at least the features of claim 11 recited above." The examiner respectfully disagrees. See above.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 6-13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al, U.S. Patent 6,373,533, in view of Kishida, U.S. Patent 5,287,418.

Regarding claim 1, Kawabata teaches an image processing method that executes image processing on digital image data (col. 1, lines 4-6). Kawabata teaches a histogram generator that calculates the distribution of picture levels in an input video signal, a gain controller that outputs a value for correcting the histogram, and a histogram correction circuit that corrects the image histogram according to the value supplied by the gain controller (col. 3, lines 1-10). The output of the gain controller is the density conversion condition, and the corrected histogram is the gradation conversion condition determined on the basis of the density conversion condition. Kawabata further teaches a video signal correction circuit that modifies the input signals using the corrected histogram (col. 3, lines 11-13).

Kawabata does not disclose that the digital image data was obtained by a digital camera, nor does Kawabata teach a step of creating the reproduced image. Kishida does disclose that a digital camera obtains the digital image data (Fig. 1), where digital camera has been interpreted broadly to mean a device that inputs analog data, converts it to digital data, and processes the digital data. Kishida also teaches that the image is recreated and displayed (col. 4, lines 50-52, 57-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the signal processing method disclosed by Kawabata with the input and output steps disclosed by Kishida to obtain a full system that obtains digital image data, determines a density conversion condition, determines a gradation conversion condition based on the density conversion condition, processes the digital image data according to the

gradation conversion condition, and outputs the recreated image. One of ordinary skill in the art would be motivated to make such a modification because the input and output means enable one to obtain an image and view it, and the image processing method allows one to improve the image quality.

Regarding claim 10, because the method of image processing with the limitations of claim 1 is taught, the apparatus associated with the method is also already taught.

Regarding claim 2, Kishida discloses a step of separating the digital image data into density component data and color component data (col. 5, lines 1-3). It is an inherent step in digital signal processing methods to separate color image data into luminance and chrominance signals to obtain a luminance signal. Kishida also discloses a color monitor for displaying the reproduced image (Fig. 6), and it is inherent that density component data needs to be synthesized with color component data for an image to be displayed on a color monitor.

Regarding claim 11, because the method of image processing with the limitations of claim 2 is taught, the apparatus associated with the method is also already taught.

Regarding claim 3, Kawabata discloses that the density conversion condition is determined based on a characteristic value of the image expressed by the digital image data (col. 4, lines 22-25).

Regarding claim 12, because the method of image processing with the limitations of claim 3 is taught, the apparatus associated with the method is also already taught.

Regarding claim 4, Kawabata discloses that the characteristic value of the image is a mean value of densities of the digital image data (col. 4, lines 22-25).



Regarding claim 13, because the method of image processing with the limitations of claim 4 is taught, the apparatus associated with the method is also already taught.

Regarding claim 6, Kawabata discloses that a certain value is added to the frequency of one interval and subtracted from the frequency of others (col. 3, lines 33-37). Kawabata also discloses that the frequency of the former interval is intensified to improve the contrast of this portion (col. 3, lines 38-40). Accordingly, the frequency of the intervals whose values have decreased will decrease in intensity. Therefore, based on a predetermined certain value, the gradation conversion condition hardens and softens tones in the image.

Regarding claim 15, because the method of image processing with the limitations of claim 6 is taught, the apparatus associated with the method is also already taught.

Regarding claim 7, Kishida discloses that an operator views the image expressed by the digital image data, thus indicating that the data is displayed on display means (col. 3, lines 37). The operator may use a keyboard to select density conversion conditions that determine the gradation conversion condition (col. 3, lines 48-54).

Regarding claim 16, because the method of image processing with the limitations of claim 7 is taught, the apparatus associated with the method is also already taught.

Regarding claim 8, Kawabata discloses that the brightest input signals map to white or approximately white regions for the output (Figs. 3, 4, and 7).

Regarding claim 17, because the method of image processing with the limitations of claim 8 is taught, the apparatus associated with the method is also already taught.

Regarding claim 9, Kawabata discloses that the gradation conversion condition has a boundary condition to prevent excessive correction (col. 4, lines 50-53). The condition ensures

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that as the average picture level  $f$  decreases, the adjustment value  $c$  cannot be so high as to render an interval of frequencies zero or below zero.

Regarding claim 18, because the method of image processing with the limitations of claim 9 is taught, the apparatus associated with the method is also already taught.

6. Claims 5 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al, U.S. Patent 6,373,533, in view of Kishida, U.S. Patent 5,287,418, and further in view of Asada, U.S. Patent 5,875,262.

Regarding claim 5, Kawabata in view of Kishida discloses an image processing method according to claim 3. See above. Kawabata in view of Kishida does not disclose that the characteristic value is a weighted mean value based on a weight coefficient determined by a color in each pixel of the digital image data. Asada discloses the calculation of a characteristic value of a weighted mean value based on a weight coefficient determined by a color in each pixel of the digital image data (col. 30, line 45-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the weighted mean value based on color disclosed by Asada with the image processing method disclosed by Kawabata in view of Kishida to make a tone correction method whose density conversion condition is dependent upon color information in the digital image data. One of ordinary skill would be motivated to make this modification because the tone correction method would take color information specific to the image into account when modifying the density of the image.

*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dorothy Wu whose telephone number is 703-305-8412. The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on 703-305-4863.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC 20231

Or faxed to:

Art Unit: 2697

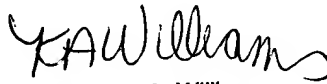
703-872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding  
should be directed to the Technology Center 2600 Customer Service Office whose telephone  
number is 703-306-0377.



DW  
April 22, 2003



Kimberly A. Williams  
Primary Examiner  
Technology Center 2600